



SEQUENCE LISTING

<110> Bruck, Claudine
Godart, Stephane Andre Georges
Marc-Hand, Martine

<120> Fusion Proteins Comprising HIV-1 TAT
and/or Nef Proteins

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<140> 09/509,239

<141> 2000-03-23

<150> PCT/EP98/06040

<151> 1998-09-17

<150> GB 9720585.0

<151> 1997-09-26

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<212> PRT

<213> Pichia pastoris

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 35 40 45
 Glu His Thr Leu Glu Ser Lys Ala Leu Ala Phe Ala Gln Gln Ala Asp
 50 55 60
 Tyr Leu Glu Gln Asp Leu Ala Met Thr Lys Asp Gly Arg Leu Val Val
 65 70 75 80
 Ile His Asp His Phe Leu Asp Gly Leu Thr Asp Val Ala Lys Lys Phe
 85 90 95
 Pro His Arg His Arg Lys Asp Gly Arg Tyr Tyr Val Ile Asp Phe Thr
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ttccctgatt	ggcagaacta	cacaccaggg	ccaggggtca	gatatccact	gacctttgga	420
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Tyr	Lys	Ala	Ala	Val	Asp	Leu	Ser	His	Phe	Leu	Lys	Glu	Lys	Gly	
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Leu	Val	Pro	Val	Glu	Pro	Asp	Lys	Val	Glu	Glu	Ala	Asn	Lys	Gly	Glu
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Asn	Thr	Ser	Leu	Leu	His	Pro	Val	Ser	Leu	His	Gly	Met	Asp	Asp	Pro
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Glu	Arg	Glu	Val	Leu	Glu	Trp	Arg	Phe	Asp	Ser	Arg	Leu	Ala	Phe	His
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His	Val	Ala	Arg	Glu	Leu	His	Pro	Glu	Tyr	Phe	Lys	Asn	Cys	Thr	Ser
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<212> PRT

<213> Pichia pastoris

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Gln Pro Lys Thr Ala Cys Thr Asn Cys Tyr Cys Lys Lys Cys Cys Phe
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His Cys Gln Val Cys Phe Ile Thr Lys Ala Leu Gly Ile Ser Tyr Gly
35 40 45
Arg Lys Lys Arg Arg Gln Arg Arg Arg Pro Pro Gln Gly Ser Gln Thr
50 55 60
His Gln Val Ser Leu Ser Lys Gln Pro Thr Ser Gln Ser Arg Gly Asp
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Pro Thr Gly Pro Lys Glu Thr Ser Gly His His His His His His
85 90 95

<210> 12

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<212> DNA

<213> Pichia pastoris

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ggagcaatca caagtagcaa tacagcagct accaatgctg cttgtgcctg gctagaagca 180
caagaggagg aggaggtggg ttttccagtc acacccctagg taccttaag accaatgact 240
tacaaggcag ctgttagatct tagccacttt ttaaaagaaa aggggggact ggaagggcta 300
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ttccctgatt ggcagaacta cacaccagg ccaggggtca gatatccact gacctttgga 420
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<213> Pichia pastoris

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35 40 45
Ala Ala Thr Asn Ala Ala Cys Ala Trp Leu Glu Ala Gln Glu Glu Glu
50 55 60
Glu Val Gly Phe Pro Val Thr Pro Gln Val Pro Leu Arg Pro Met Thr
65 70 75 80
Tyr Lys Ala Ala Val Asp Leu Ser His Phe Leu Lys Glu Lys Gly Gly
85 90 95
Leu Glu Gly Leu Ile His Ser Gln Arg Arg Gln Asp Ile Leu Asp Leu
100 105 110
Trp Ile Tyr His Thr Gln Gly Tyr Phe Pro Asp Trp Gln Asn Tyr Thr
115 120 125
Pro Gly Pro Gly Val Arg Tyr Pro Leu Thr Phe Gly Trp Cys Tyr Lys
130 135 140
Leu Val Pro Val Glu Pro Asp Lys Val Glu Glu Ala Asn Lys Gly Glu
145 150 155 160
Asn Thr Ser Leu Leu His Pro Val Ser Leu His Gly Met Asp Asp Pro
165 170 175
Glu Arg Glu Val Leu Glu Trp Arg Phe Asp Ser Arg Leu Ala Phe His
180 185 190
His Val Ala Arg Glu Leu His Pro Glu Tyr Phe Lys Asn Cys Thr Ser
195 200 205
Glu Pro Val Asp Pro Arg Leu Glu Pro Trp Lys His Pro Gly Ser Gln
210 215 220
Pro Lys Thr Ala Cys Thr Asn Cys Tyr Cys Lys Lys Cys Cys Phe His
225 230 235 240
Cys Gln Val Cys Phe Ile Thr Lys Ala Leu Gly Ile Ser Tyr Gly Arg
245 250 255
Lys Lys Arg Arg Gln Arg Arg Arg Pro Pro Gln Gly Ser Gln Thr His
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cgtaaagatg gccgttacta tgtcatcgac tttaccttaa aagaaattca aagtttagaa	360
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<212> PRT

<213> Pichia pastoris

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Thr Leu Glu Ser Lys Ala Leu Ala Phe Ala Gln Gln Ala Asp Tyr Leu			
35	40	45	
Glu Gln Asp Leu Ala Met Thr Lys Asp Gly Arg Leu Val Val Ile His			
50	55	60	
Asp His Phe Leu Asp Gly Leu Thr Asp Val Ala Lys Lys Phe Pro His			
65	70	75	80
Arg His Arg Lys Asp Gly Arg Tyr Tyr Val Ile Asp Phe Thr Leu Lys			
85	90	95	
Glu Ile Gln Ser Leu Glu Met Thr Glu Asn Phe Glu Thr Met Gly Gly			

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Lys Trp Ser Lys Ser Ser Val Val Gly Trp Pro Thr Val Arg Glu Arg		
115	120	125
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Asp Leu Glu Lys His Gly Ala Ile Thr Ser Ser Asn Thr Ala Ala Thr		
145	150	155
Asn Ala Ala Cys Ala Trp Leu Glu Ala Gln Glu Glu Glu Val Gly		
165	170	175
Phe Pro Val Thr Pro Gln Val Pro Leu Arg Pro Met Thr Tyr Lys Ala		
180	185	190
Ala Val Asp Leu Ser His Phe Leu Lys Glu Lys Gly Gly Leu Glu Gly		
195	200	205
Leu Ile His Ser Gln Arg Arg Gln Asp Ile Leu Asp Leu Trp Ile Tyr		
210	215	220
His Thr Gln Gly Tyr Phe Pro Asp Trp Gln Asn Tyr Thr Pro Gly Pro		
225	230	235
Gly Val Arg Tyr Pro Leu Thr Phe Gly Trp Cys Tyr Lys Leu Val Pro		
245	250	255
Val Glu Pro Asp Lys Val Glu Glu Ala Asn Lys Gly Glu Asn Thr Ser		
260	265	270
Leu Leu His Pro Val Ser Leu His Gly Met Asp Asp Pro Glu Arg Glu		
275	280	285
Val Leu Glu Trp Arg Phe Asp Ser Arg Leu Ala Phe His His Val Ala		
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 <212> DNA
 <213> *Pichia pastoris*

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caacaggctg attatttaga gcaagattta gcaatgacta aggatggtcg tttagtggtt	240
attcacgatc actttttaga tggcttgact gatgttgcga aaaaattccc acatcgatcat	300
cgtaaagatg gccgttacta tgtcatcgac tttaccttaa aagaaattca aagttagaa	360
atgacagaaaa actttgaaac catgggtggc aagtggctaa aaagttagtgt ggttggatgg	420

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<212> PRT
<213> *Pichia pastoris*

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Thr	Leu	Glu	Ser	Lys	Ala	Leu	Ala	Phe	Ala	Gln	Gln	Ala	Asp	Tyr	Leu
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Arg	His	Arg	Lys	Asp	Gly	Arg	Tyr	Tyr	Val	Ile	Asp	Phe	Thr	Leu	Lys
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Leu Ile His Ser Gln Arg Arg Gln Asp Ile Leu Asp Leu Trp Ile Tyr		
210	215	220
His Thr Gln Gly Tyr Phe Pro Asp Trp Gln Asn Tyr Thr Pro Gly Pro		
225	230	235
Gly Val Arg Tyr Pro Leu Thr Phe Gly Trp Cys Tyr Lys Leu Val Pro		
245	250	255
Val Glu Pro Asp Lys Val Glu Ala Asn Lys Gly Glu Asn Thr Ser		
260	265	270
Leu Leu His Pro Val Ser Leu His Gly Met Asp Asp Pro Glu Arg Glu		
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Val Leu Glu Trp Arg Phe Asp Ser Arg Leu Ala Phe His His Val Ala		
290	295	300
Arg Glu Leu His Pro Glu Tyr Phe Lys Asn Cys Thr Ser Glu Pro Val		
305	310	315
Asp Pro Arg Leu Glu Pro Trp Lys His Pro Gly Ser Gln Pro Lys Thr		
325	330	335
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340	345	350
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355	360	365
Arg Gln Arg Arg Pro Pro Gln Gly Ser Gln Thr His Gln Val Ser		
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 <212> DNA
 <213> Pichia pastoris

<400> 18

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cgtttagtgg ttattcacga tcactttta gatggcttga ctgatgttc gaaaaaaattc	240
ccacatcgtc atcgtaaaga tggccgttac tatgtcatcg actttacctt aaaagaaatt	300

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<211> 326

<212> PRT

<213> *Pichia pastoris*

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			20					25					30		
Glu	His	Thr	Leu	Glu	Ser	Lys	Ala	Leu	Ala	Phe	Ala	Gln	Gln	Ala	Asp
			35					40				45			
Tyr	Leu	Glu	Gln	Asp	Leu	Ala	Met	Thr	Lys	Asp	Gly	Arg	Leu	Val	Val
			50				55				60				
Ile	His	Asp	His	Phe	Leu	Asp	Gly	Leu	Thr	Asp	Val	Ala	Lys	Lys	Phe
			65				70				75			80	
Pro	His	Arg	His	Arg	Lys	Asp	Gly	Arg	Tyr	Tyr	Val	Ile	Asp	Phe	Thr
					85				90				95		
Leu	Lys	Glu	Ile	Gln	Ser	Leu	Glu	Met	Thr	Glu	Asn	Phe	Glu	Thr	Met
			100					105				110			
Gly	Gly	Lys	Trp	Ser	Lys	Ser	Ser	Val	Val	Gly	Trp	Pro	Thr	Val	Arg
			115				120					125			
Glu	Arg	Met	Arg	Arg	Ala	Glu	Pro	Ala	Ala	Asp	Gly	Val	Gly	Ala	Ala
			130				135				140				
Ser	Arg	Asp	Leu	Glu	Lys	His	Gly	Ala	Ile	Thr	Ser	Ser	Asn	Thr	Ala
			145				150				155			160	
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					165				170				175		
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					180				185			190			

Lys Ala Ala Val Asp Leu Ser His Phe Leu Lys Glu Lys Gly Gly Leu
 195 200 205
 Glu Gly Leu Ile His Ser Gln Arg Arg Gln Asp Ile Leu Asp Leu Trp
 210 215 220
 Ile Tyr His Thr Gln Gly Tyr Phe Pro Asp Trp Gln Asn Tyr Thr Pro
 225 230 235 240
 Gly Pro Gly Val Arg Tyr Pro Leu Thr Phe Gly Trp Cys Tyr Lys Leu
 245 250 255
 Val Pro Val Glu Pro Asp Lys Val Glu Glu Ala Asn Lys Gly Glu Asn
 260 265 270
 Thr Ser Leu Leu His Pro Val Ser Leu His Gly Met Asp Asp Pro Glu
 275 280 285
 Arg Glu Val Leu Glu Trp Arg Phe Asp Ser Arg Leu Ala Phe His His
 290 295 300
 Val Ala Arg Glu Leu His Pro Glu Tyr Phe Lys Asn Cys Thr Ser Gly
 305 310 315 320
 His His His His His
 325

<210> 20
 <211> 1242
 <212> DNA
 <213> *Pichia pastoris*

<400> 20

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cttgcgtttg	cacaacaggc	tgattattta	gagcaagatt	tagcaatgac	taaggatgg	180
cgttttagtgg	ttattcacga	tcactttta	gatggcttga	ctgatgttgc	gaaaaaattc	240
ccacatcgtc	atcgtaaaga	tggccgttac	tatgtcatcg	actttacctt	aaaagaaaatt	300
caaagtttag	aaatgacaga	aaactttgaa	accatgggtg	gcaagtggtc	aaaaagtagt	360
gtgggtggat	ggcctactgt	aaggaaaga	atgagacgag	ctgagccagc	agcagatgg	420
gtgggagcag	catctcgaga	cctggaaaaa	catggagcaa	tcacaagtag	caatacagca	480
gctaccaatg	ctgcttgtgc	ctggctagaa	gcacaagagg	aggaggaggt	gggtttcca	540
gtcacaccc	agg tacctt	aagaccaatg	acttacaagg	cagctgtaga	tcttagccac	600
tttttaaaag	aaaagggggg	actggaaggg	ctaattcaact	cccaacgaag	acaagatatc	660
cttgatctgt	ggatctacca	cacacaaggc	tacttccctg	attggcagaa	ctacacacca	720
gggccagggg	tcatatatcc	actgacctt	ggatgggtgc	acaagctagt	accagttgag	780
ccagataagg	tagaagaggg	caataaagga	gagaacacca	gcttgttaca	ccctgtgagc	840
ctgcacggaa	tggatgaccc	tgagagagaa	gtgttagagt	ggaggttga	cagccgccta	900
gcatttcatc	acgtggcccc	agagctgcat	ccggagttact	tcaagaactg	cactagttag	960
ccagtagatc	ctagactaga	gccctggaag	catccaggaa	gtcagcctaa	aactgcttgc	1020
accaattgct	attgtaaaaa	gtgttgctt	cattgccaag	tttggttcat	aacaaaagcc	1080

ttaggcatct cctatggcag gaagaagcgg agacagcgac gaagacctcc tcaaggcagt 1140
cagactcatc aagtttctct atcaaagcaa cccacctccc aatcccgagg ggacccgaca 1200
ggcccgagg aaactagtgg ccaccatcac catcaccatt aa 1242

<210> 21
<211> 413
<212> PRT
<213> *Pichia pastoris*

<400> 21

Met	Asp	Pro	Ser	Ser	His	Ser	Ser	Asn	Met	Ala	Asn	Thr	Gln	Met	Lys
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Ser	Asp	Lys	Ile	Ile	Ile	Ala	His	Arg	Gly	Ala	Ser	Gly	Tyr	Leu	Pro
			20					25					30		
Glu	His	Thr	Leu	Glu	Ser	Lys	Ala	Leu	Ala	Phe	Ala	Gln	Gln	Ala	Asp
				35				40				45			
Tyr	Leu	Glu	Gln	Asp	Leu	Ala	Met	Thr	Lys	Asp	Gly	Arg	Leu	Val	Val
			50				55				60				
Ile	His	Asp	His	Phe	Leu	Asp	Gly	Leu	Thr	Asp	Val	Ala	Lys	Lys	Phe
65				70					75			80			
Pro	His	Arg	His	Arg	Lys	Asp	Gly	Arg	Tyr	Tyr	Val	Ile	Asp	Phe	Thr
				85				90				95			
Leu	Lys	Glu	Ile	Gln	Ser	Leu	Glu	Met	Thr	Glu	Asn	Phe	Glu	Thr	Met
				100			105				110				
Gly	Gly	Lys	Trp	Ser	Lys	Ser	Ser	Val	Val	Gly	Trp	Pro	Thr	Val	Arg
			115				120				125				
Glu	Arg	Met	Arg	Arg	Ala	Glu	Pro	Ala	Ala	Asp	Gly	Val	Gly	Ala	Ala
		130				135				140					
Ser	Arg	Asp	Leu	Glu	Lys	His	Gly	Ala	Ile	Thr	Ser	Ser	Asn	Thr	Ala
145				150					155			160			
Ala	Thr	Asn	Ala	Ala	Cys	Ala	Trp	Leu	Glu	Ala	Gln	Glu	Glu	Glu	
				165				170				175			
Val	Gly	Phe	Pro	Val	Thr	Pro	Gln	Val	Pro	Leu	Arg	Pro	Met	Thr	Tyr
				180			185				190				
Lys	Ala	Ala	Val	Asp	Leu	Ser	His	Phe	Leu	Lys	Glu	Lys	Gly	Gly	Leu
			195				200				205				
Glu	Gly	Leu	Ile	His	Ser	Gln	Arg	Arg	Gln	Asp	Ile	Leu	Asp	Leu	Trp
			210				215				220				
Ile	Tyr	His	Thr	Gln	Gly	Tyr	Phe	Pro	Asp	Trp	Gln	Asn	Tyr	Thr	Pro
225				230				235				240			
Gly	Pro	Gly	Val	Arg	Tyr	Pro	Leu	Thr	Phe	Gly	Trp	Cys	Tyr	Lys	Leu
			245				250				255				
Val	Pro	Val	Glu	Pro	Asp	Lys	Val	Glu	Glu	Ala	Asn	Lys	Gly	Glu	Asn

260	265	270
Thr Ser Leu Leu His Pro Val Ser Leu His Gly Met Asp Asp Pro Glu		
275	280	285
Arg Glu Val Leu Glu Trp Arg Phe Asp Ser Arg Leu Ala Phe His His		
290	295	300
Val Ala Arg Glu Leu His Pro Glu Tyr Phe Lys Asn Cys Thr Ser Glu		
305	310	315
Pro Val Asp Pro Arg Leu Glu Pro Trp Lys His Pro Gly Ser Gln Pro		
325	330	335
Lys Thr Ala Cys Thr Asn Cys Tyr Cys Lys Lys Cys Cys Phe His Cys		
340	345	350
Gln Val Cys Phe Ile Thr Lys Ala Leu Gly Ile Ser Tyr Gly Arg Lys		
355	360	365
Lys Arg Arg Gln Arg Arg Arg Pro Pro Gln Gly Ser Gln Thr His Gln		
370	375	380
Val Ser Leu Ser Lys Gln Pro Thr Ser Gln Ser Arg Gly Asp Pro Thr		
385	390	395
Gly Pro Lys Glu Thr Ser Gly His His His His His His		
405	410	

<210> 22

<211> 288

<212> DNA

<213> *Pichia pastoris*

<400> 22

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gctgccttag gcatctccta tggcaggaag aagcggagac agcgacgaag acctcctcaa	180
ggcagtcaga ctcatcaagt ttctctatca aagcaaccca cctcccaatc caaaggggag	240
ccgacaggcc cgaaggaaac tagtgccac catcaccatc accattaa	288

<210> 23

<211> 95

<212> PRT

<213> *Pichia pastoris*

<400> 23

Met Glu Pro Val Asp Pro Arg Leu Glu Pro Trp Lys His Pro Gly Ser		
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		15
Gln Pro Lys Thr Ala Cys Thr Asn Cys Tyr Cys Lys Lys Cys Cys Phe		
20	25	30
His Cys Gln Val Cys Phe Ile Thr Ala Ala Leu Gly Ile Ser Tyr Gly		

35	40	45
Arg Lys Lys Arg Arg Gln Arg Arg Arg Pro Pro Gln Gly Ser Gln Thr		
50	55	60
His Gln Val Ser Leu Ser Lys Gln Pro Thr Ser Gln Ser Lys Gly Glu		
65	70	75
Pro Thr Gly Pro Lys Glu Thr Ser Gly His His His His His His		
85	90	95

<210> 24

<211> 909

<212> DNA

<213> Pichia pastoris

<400> 24

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agacgagctg agccagcagc agatgggtg ggagcagcat ctcgagacct ggaaaaacat	120
ggagcaatca caagtagcaa tacagcagct accaatgctg cttgtgcctg gctagaagca	180
caagaggagg aggaggtggg tttccagtc acacctcagg taccttaag accaatgact	240
tacaaggcag ctgttagatct tagccactt ttaaaagaaa agggggact ggaagggcta	300
attcactccc aacgaagaca agatatcctt gatctgtgga tctaccacac acaaggctac	360
ttccctgatt ggcagaacta cacaccagg ccaggggtca gatatccact gacctttgga	420
tgtgctaca agctagtacc agttgagcca gataaggttag aagaggccaa taaaggagag	480
aacaccagct tgttcacccc tgtgagcctg catggatgg atgaccctga gagagaagtg	540
ttagagtgga gtttgacag ccgcctagca ttcatcactg tggcccgaga gctgcattccg	600
gagtacttca agaactgcac tagtgagcca gtagatccta gactagagcc ctggaagcat	660
ccaggaagtc agcctaaaac tgcttgtacc aattgctatt gtaaaaagtg ttgcttcat	720
tgccaagttt gtttcataac agctgcctt ggcatttcct atggcaggaa gaagcggaga	780
cagcgacgaa gacctcctca aggcaagtcag actcatcaag tttctctatc aaagcaaccc	840
acctcccaat ccaaaggaga gccgacaggc ccgaaggaaa ctagtgccca ccatcaccat	900
caccattaa	909

<210> 25

<211> 302

<212> PRT

<213> Pichia pastoris

<400> 25

Met Gly Gly Lys Trp Ser Lys Ser Ser Val Val Val Gly Trp Pro Thr Val			
1	5	10	15
Arg Glu Arg Met Arg Arg Ala Glu Pro Ala Ala Asp Gly Val Gly Ala			
20	25	30	
Ala Ser Arg Asp Leu Glu Lys His Gly Ala Ile Thr Ser Ser Asn Thr			
35	40	45	

Ala Ala Thr Asn Ala Ala Cys Ala Trp Leu Glu Ala Gln Glu Glu Glu
50 55 60
Glu Val Gly Phe Pro Val Thr Pro Gln Val Pro Leu Arg Pro Met Thr
65 70 75 80
Tyr Lys Ala Ala Val Asp Leu Ser His Phe Leu Lys Glu Lys Gly Gly
85 90 95
Leu Glu Gly Leu Ile His Ser Gln Arg Arg Gln Asp Ile Leu Asp Leu
100 105 110
Trp Ile Tyr His Thr Gln Gly Tyr Phe Pro Asp Trp Gln Asn Tyr Thr
115 120 125
Pro Gly Pro Gly Val Arg Tyr Pro Leu Thr Phe Gly Trp Cys Tyr Lys
130 135 140
Leu Val Pro Val Glu Pro Asp Lys Val Glu Glu Ala Asn Lys Gly Glu
145 150 155 160
Asn Thr Ser Leu Leu His Pro Val Ser Leu His Gly Met Asp Asp Pro
165 170 175
Glu Arg Glu Val Leu Glu Trp Arg Phe Asp Ser Arg Leu Ala Phe His
180 185 190
His Val Ala Arg Glu Leu His Pro Glu Tyr Phe Lys Asn Cys Thr Ser
195 200 205
Glu Pro Val Asp Pro Arg Leu Glu Pro Trp Lys His Pro Gly Ser Gln
210 215 220
Pro Lys Thr Ala Cys Thr Asn Cys Tyr Cys Lys Lys Cys Cys Phe His
225 230 235 240
Cys Gln Val Cys Phe Ile Thr Ala Ala Leu Gly Ile Ser Tyr Gly Arg
245 250 255
Lys Lys Arg Arg Gln Arg Arg Pro Pro Gln Gly Ser Gln Thr His
260 265 270
Gln Val Ser Leu Ser Lys Gln Pro Thr Ser Gln Ser Lys Gly Glu Pro
275 280 285
Thr Gly Pro Lys Glu Thr Ser Gly His His His His His His
290 295 300

<210> 26
<211> 57
<212> DNA
<213> *Pichia pastoris*

<400> 26

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57

<210> 27

<211> 9

<212> PRT

<213> *Pichia pastoris*

<400> 27

- Thr Ser Gly His His His His His His

1

5